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ON DISARMAMENT

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FINAL VERBATIM RECORD OF THE TWO HUNDRED AND FIFTY-FOURTH MEETING

Held at the Palais des Nations, Geneva,  
on Monday, 4 April 1966, at 10.30 a.m.

Chairman:

Lord CHALFONT

(United Kingdom)

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U MAUNG MAUNG GYI

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Mr. G.O. IJEWERE

Mr. O.O. ADESOLA

## PRESENT AT THE TABLE (cont'd)

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Mr. M. BLUSZTAJN  
Mr. E. STANIEWSKI  
Mr. A. SKOWRONSKI  
Mrs. H. SKOWRONSKA

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United States of America:

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Mr. C.H. TIMBERLAKE  
Mr. L.D. WEILER  
Mr. D.S. MACDONAL

Special Representative of the  
Secretary-General:

Mr. D. PROTITCH

Deputy Special Representative  
of the Secretary-General:

Mr. W. EPSTEIN

The CHAIRMAN (United Kingdom): I declare open the two hundred and fifty-fourth plenary meeting of the Conference of the Eighteen-Nation Committee on Disarmament.

Mr. BLUSZTAJN (Poland) (translation from French): The Polish delegation would like to devote its remarks today to the general principles underlying article I of the Soviet draft treaty on the non-proliferation of nuclear weapons (ENDC/164). This article, as we know, deals with the obligations of countries producing nuclear weapons towards those not producing them, which is still the main point of disagreement in the Committee.

Let us first of all try to define the ways in which nuclear weapons can be disseminated. I think a distinction must be made between two kinds of dissemination:

1. Dissemination by an increase in the number of countries producing nuclear weapons;
2. Dissemination by transfer of nuclear weapons. Transfer may be either physical or consist of transfer of the ownership, possession or control of nuclear weapons. It may also extend to materials, scientific or technological information, and any other item of use in initiating the manufacture of nuclear weapons.

We consider that the nature and forms of the obligations of the States signatories to a non-dissemination treaty should as closely as possible reflect the means at present available to States for the dissemination of nuclear weapons. If we left any of these means outside the scope of the treaty, we should certainly reduce its effectiveness. That is why, in its resolution 2028(XX) (ENDC/161), the General Assembly of the United Nations decided in favour of a complete and general treaty which should leave no loop-holes for the proliferation of nuclear weapons.

This means that:

1. Such a treaty must not only exclude every physical form of dissemination, but also extend the prohibition to every State or group of States. No State can be allowed to transfer, nor any State or group of States to acquire, certain rights in the nuclear weapons field without thereby giving certain States an advantage over others;
2. The prohibition contained in the treaty should not merely extend to physical means of dissemination but should also reflect a legal definition of non-dissemination capable of precluding any possibility of arbitrary interpretation.

(Mr. Blusztajn, Poland)

The Polish delegation considers that article I of the Soviet draft meets these requirements. It contains two kinds of obligations for nuclear countries, the first relating to the transfer of nuclear weapons and the second to that of any facilities which might help a non-nuclear country to start producing nuclear weapons. The obligations of the nuclear countries have thus been formulated in such a way as to preclude any physical possibility of dissemination.

The draft submitted by the Soviet delegation also forbids parties to transfer the ownership or control of nuclear weapons, to accord the right to participate in the ownership, control or use of nuclear weapons, to provide assistance in the manufacture, in preparations for the manufacture or in the testing of nuclear weapons, or to transmit any kind of manufacturing, research or other information or documentation which can be employed for purposes of the manufacture or use of nuclear weapons.

The remaining obligations of the nuclear Powers are specified in the paragraph prohibiting transfer of nuclear weapons or control over them or over their emplacement and use to units of the armed forces or military personnel of States not possessing nuclear weapons, even if such units or personnel are under the command of a military alliance.

Furthermore, in interpreting article I of the draft treaty submitted by the Soviet Union we must bear in mind article III, which lays down the general rule that States shall refrain from offering any support, encouragement or inducement to States seeking to own, manufacture or exercise control over nuclear weapons. In the Polish delegation's opinion, the aim of this article is that the international community should confirm the obligation of nuclear States to abstain from any action, including political action, which might result in the dissemination of nuclear weapons.

I do not propose to deal today with all the problems of law and interpretation raised by perusal of article I of the Soviet draft. I should like instead to concentrate on a few of them which in my opinion clearly bring out the difference between the Soviet and the United States drafts.

The first problem concerns the scope of the prohibition. The draft treaty submitted by the Soviet Union prohibits the physical transfer of nuclear weapons and the transfer of certain rights over them. Thus we have a prohibition of the

(Mr. Blusztajn, Poland)

physical transfer of the ownership of nuclear weapons and of the right and ability to control them. The word "control" means not only the ability to use them in the sense of "firing" them, but also all the decisions which may be entailed by the physical or legal possession of nuclear weapons.

The United States draft (ENDC/152 and Add.1), on the other hand, article I of which contains the now generally accepted obligations related to the non-dissemination of nuclear weapons, reduces the scope of these obligations. The definition in article IV (c) extends the prohibition of the transfer of nuclear weapons, not to the physical act of transfer, but to the "right or ability to fire nuclear weapons without the concurrent decision of an existing nuclear-weapon State". The consequences of adopting such a formula would be these:

1. All forms of ownership and co-ownership and all forms of possession or co-possession not imparting the right or ability to fire nuclear weapons would be accepted as lawful.
2. All forms of control over nuclear weapons other than the ability to fire them would be accepted as lawful.
3. The treaty would contain a formula based on subjective instead of objective criteria. The nature and extent of the obligations in a multilateral treaty would be subject to the discretion of the nuclear Powers. They would be allowed any form of transfer other than a transfer of the right and ability to fire nuclear weapons, and would be the sole judges of whether this provision was being observed or not.

The second problem I should like to raise concerns the subjects dealt with in the two draft treaties. The text submitted by the Soviet Union employs the concepts of States, groups of States, units of armed forces and military personnel. These are generally-recognized concepts and are clearly defined in international law. The United States draft, on the other hand, introduces the idea of an association of States, distinguishing between associations of non-nuclear States and associations containing both non-nuclear States and a nuclear State.

Consequently, by contrast with the Soviet draft, which extends the prohibition on transfer of nuclear weapons to groups of States of all kinds, the United States draft applies the prohibition solely to associations of non-nuclear States. As a

(Mr. Blusztajn, Poland)

result, the creation of an association comprising non-nuclear countries and one or more nuclear countries would, provided that the latter handed over their entire arsenal to the association, become legal. Although in his statement at our meeting on 31 March 1966 the United States representative, Mr. Fisher, tried to minimize the practical consequences of this exception, (ENDC/PV.253, p.12) this formula nevertheless clearly represents a substantial loop-hole in the prohibition of the dissemination of nuclear weapons.

The provision against increasing the total number of centres of nuclear power would be of little value if an association were formed between non-nuclear countries and a nuclear Power, because such arrangements must inevitably increase the number of fingers on the nuclear trigger. The internationalization of rights concerning the use of nuclear weapons could only result in heightening mistrust and tension and encouraging the arms race.

The difficulty facing us in negotiating a non-dissemination treaty is, I think, essentially political. It derives from differing assessments of the role of nuclear weapons in the modern world, and reflects two views of the function of collateral measures in improving international relations.

We all agree on the need to prevent an increase in the number of States producing nuclear weapons. I agree with Mr. Fisher that what stops a number of developed countries from producing nuclear weapons is not technical backwardness but rather their wise political judgement that to acquire nuclear weapons would help neither their own security nor world peace. (ibid., pp.10,11) We entirely share the views of those States, and are ready to embody this expression of political wisdom as a provision in an international treaty.

But if these States are prepared to abandon the right to nuclear weapons once and for all, I think we are entitled to require all non-nuclear States--whether members of military alliances or non-aligned--to fall into step with them: in other words, to renounce any form of access, direct or indirect, to nuclear weapons. That would also be an act of great political wisdom, an explicit recognition that attempts to set up various nuclear arrangements within alliances would help neither the national security of the countries concerned nor world peace.

(Mr. Blusztajn, Poland)

The Western delegations claim that an arrangement by which a nuclear Power would retain a veto over the use of atomic weapons within an association would not constitute dissemination. Obviously, if the only accepted criterion is the ability to fire, such a definition of non-dissemination is correct. We have frequently tried to show, however, that the choice of this criterion is arbitrary and completely blocks the progress of our negotiations, for it tends to legalize steps which, if successful, would impair European and world relations.

The Western delegations would like to introduce into the treaty an escape clause in favour of an association of non-nuclear States with a nuclear Power whereby the latter placed its entire nuclear arsenal in the hands of the association. This may be a pure hypothesis, and perhaps no such association will appear in the predictable future. What alarms me, however, is the conviction of the United States delegation, so clearly expressed by Mr. Fisher, that the creation of an association of that kind is desirable and would mark a progress in relations between the nations of our old continent. I must say that, far from agreeing with this opinion, I deem it highly dangerous. To encourage such a development would be a bad service to peace.

Co-operation between European countries-- without any exception-- is an aim for which we in Poland have never ceased to strive. Collective security in Europe has always been one of our major concerns. Neither this co-operation nor this security can, however, be imagined without reduction of the mistrust engendered by the arms race and the plans to extend it to nuclear weapons. Contrary to what Mr. Fisher believes, European unity and the bomb are two mutually-exclusive concepts.

The Polish delegation hopes that our negotiations will lead to an agreement on non-dissemination acceptable to all countries. But we do not consider that this result will be attained by postulating the continuance of the cold war, by taking precautions, and by retaining a freedom of action which can only be explained by the desire to pursue a policy based on a position of strength.

(Mr. Blusztajn, Poland)

The agreement on non-dissemination can and must be the prelude to more vigorous action towards disarmament. We could count on such results if we accepted the draft treaty submitted by the Soviet Union. On the other hand, it is clear that to adopt the formula proposed by the United States, which would simply encourage the advocates of nuclear arrangements in the Atlantic Alliance, would stimulate the arms race and compromise the very meaning of our work.

Mr. BURNS (Canada): We have listened with great attention to the statement just made by the representative of Poland, which was very carefully reasoned. He advanced certain arguments which we should like to study in the verbatim record before responding to them.

Today the Canadian delegation would like to offer some comments on the terms of the two draft treaties (ENDC/152 and Add.1; ENDC/164) which are before the Committee. We found the discussion on 29 March (ENDC/PV.252) very useful, and we have studied with care the remarks of Mr. Roshchin, the representative of the Soviet Union, and of Mr. Cavalletti, the representative of Italy. The article-by-article discussion of the draft treaties -- which, as has been remarked, have much in common -- is, in our view, the way to clarify the issues to the point when it will be possible for the political authorities concerned to take, at the appropriate time, the decisions necessary to obtain agreement.

Today we should like to take a somewhat different approach to these draft treaties from that of the representative of Poland. Whereas he dwelt on article I of the treaties, we should like to compare the language of the revised article II of the United States treaty with that of article II of the Soviet Union treaty. We choose to deal with article II because it would be the most important article in imposing obligations on non-nuclear States. Canada is a non-nuclear State and, as has been frequently affirmed by our highest political authorities, intends to remain one.

I should like to divide the obligations set out in these draft articles into two categories: (a) obligations not to create or manufacture nuclear weapons and (b) obligations not to acquire them by any other means. I think that this distinction was made by the representative of Poland in his speech today. It seems to the Canadian delegation that these two parts of the obligations in articles II of both

(Mr. Burns, Canada)

draft treaties are to a large extent mixed up together. We have therefore prepared a paper separating the corresponding paragraphs, sentences or phrases into (a) and (b) and setting them out side by side, for the convenience of the Committee in following the discussion.

Even within what I have called part (a) of article II -- that is, obligations not to create or manufacture nuclear weapons -- there are two distinct sub-obligations. Thus the first part of article II paragraph 1 of the United States draft states:

"Each of the non-nuclear weapon States party to this treaty undertakes:

"1. Not to manufacture nuclear weapons ...". (ENDC/152/Add.1, p.1)

The first sentence of article II paragraph 1 of the Soviet Union draft appears to contain parallel obligations -- indeed virtually identical obligations, with one exception to which I shall revert later in this statement.

Similarly, article II paragraph 2 of the United States draft corresponds very closely to article II paragraph 2 of the Soviet draft. Article III of the Soviet draft appears to complete paragraph 2 of its article II and to correspond to the provisions of article II paragraph 2 and article I paragraph 2 of the United States draft, under which non-nuclear and nuclear parties undertake not to provide assistance, encouragement or inducement for the acquisition of nuclear weapons by non-nuclear weapon States.

Article II paragraphs 3 and 4 of the United States draft reinforce the obligations contained in the sections of its paragraphs 1 and 2 to which I have referred.

In sum, then, a comparative examination of part (a) of article II of the United States and Soviet texts clearly suggests that they simply use different language to achieve an identical purpose. If that is not the case, we assume that the Soviet and United States representatives will quickly correct us. On the other hand, if that conclusion is correct there would seem to be no reason why common language should not be agreed upon rapidly.

The Canadian delegation would therefore suggest that the United States and Soviet delegations, as co-Chairmen and as authors of the two treaty drafts before us, should agree to meet at an early date in order to examine this part of article II, together with the parts of their respective articles I which deal with the corresponding obligations of States possessing nuclear weapons -- that is, obligations not to assist any non-possessing State to create or manufacture its own nuclear weapons.

(Mr. Burns, Canada)

The object of such meetings should be to see whether or not the purpose of this part of the two drafts is in fact the same. If it is, the draftsmen of the two delegations should then produce agreed language to submit for this Committee's consideration.

As I have already indicated, there is one evident difference in part (a) of the two articles II. It relates to the question of preparing for manufacture of nuclear weapons. Under the provisions of the Soviet draft, non-nuclear States would undertake "not to ... prepare for the manufacture of nuclear weapons ..." (ENDC/164, p.5). In the United States draft there is no exact parallel to that provision. As I suggested earlier, article II paragraph 2 of the United States draft appears to us to attempt to achieve the same purpose as article II paragraph 2 of the Soviet draft. The aim of those paragraphs appears to be to prohibit the receiving of assistance in preparations for manufacture of nuclear weapons.

At our meeting on 24 February the representative of Sweden, Mrs. Myrdal, said: "I want to place in focus another, hitherto neglected difference of a more practical character: the question what more precisely is meant by the term 'prepare for manufacture'. We could, of course, all agree that it is important to block the road to nuclear weapon development as early as possible. But we must be aware that what we are facing is a long ladder with many rungs, and the practical question is: on which of these is it reasonable and feasible to introduce the international blocking? The question is interconnected with the one of control: where is that step located at which clear evidence of 'preparation' begins to show and at which international control can be made effective? (ENDC/PV.243, page 11)

The Canadian delegation agrees that it is necessary for the draftsmen of these articles to be more specific about what is meant by the provisions involving the words "prepare" and "preparations". In this connexion, as Mrs. Myrdal pointed out, almost every step in the acquisition of capacity to use atomic energy for peaceful purposes could be a step which might eventually allow production of nuclear weapons. What I am trying to bring out is that, unless the point at which "preparations" to manufacture nuclear weapons are prohibited is specifically defined, it might be better not to have such language in the treaty at all. This is a question which obviously requires further study and discussion.

(Mr. Burns, Canada)

Moreover, it is related to the matter of safeguards over fissionable material. Clearly, one way of ensuring that nuclear material and equipment are being used only for peaceful purposes is to include a strong safeguards clause in the eventual non-proliferation treaty. Canada has been urging the inclusion of such a clause since discussion of the subject began in earnest.

I turn now to another point. At our meeting on 29 March last the Soviet representative observed that --

"... they have no observations or reproaches to address to us which suggest that the Soviet draft treaty is inadequate from the point of view of effectively preventing the spread of nuclear weapons. Not a single one of the representatives of the Western Powers who have spoken here has said that the Soviet draft treaty does not provide a solution of the problem of non-proliferation or obstructs the efforts to find a solution." (ENDC/PV.252, p.10)

The Czechoslovak representative made some similar remarks on 31 March last (ENDC/PV.253, pp.9,10). The Canadian delegation suggests that safeguards is one matter in respect of which the Soviet draft is sadly lacking. As all delegations are aware, the Soviet text does not at present contain any provision on that subject. In our view this is a serious omission and one which will have to be rectified if the treaty is to have its full impact in stopping the spread of nuclear weapons. We note that a large number of other members of this Committee -- including the delegations of Sweden, the United Arab Republic and Brazil -- agree with this point of view. It is to be hoped that the Soviet Union will soon be in a position to submit an amendment on this point to its draft treaty.

I do not intend to deal today at any length with what I have termed part (b) of the United States and Soviet articles II -- that is, the obligations not to acquire nuclear weapons by means other than manufacture which parties to the treaty not possessing nuclear weapons should undertake. Indeed, my principal comment on this part of the two drafts relates precisely to the difficulty of comparing them, given the lack of clarity in the Soviet language to which I and others have referred before. No definition is provided of such key terms as "control", "possession" and "use".

(Mr. Burns, Canada)

At our meeting on 29 March last the Soviet representative, having quoted the definition of "control" in the United States draft treaty said:

"This formula means that the United States does not at all intend to prohibit such forms of the disposal of nuclear weapons as the collective ownership, control and use of nuclear weapons within the framework of military alliances ...". (ENDC/PV.252, p.7)

In his statement today the representative of Poland suggested a definition of the word "disposal"; if it is authoritative and truly conveys the meaning intended in the Soviet draft treaty, it may clear up some points. The Canadian delegation wonders whether the word which was translated into English as "disposal" might have been better translated as "disposition" or "deployment" in the context of nuclear weapons.

Turning to the definition of "control", the Canadian delegation does not think that to define "control" as it is defined in the United States draft (article IV(a)) either permits or forbids collective ownership, disposition or use of nuclear weapons. Article II of the Soviet draft purports to prohibit participation in ownership, control or use of nuclear weapons by States not possessing them. It would be helpful if the Soviet Union would clarify, by definition, what it means by "possession" or "ownership", which seem to be alternative translations of the same Russian word, and what it means by "use" in this connexion. It would also be helpful if it would either give its own definition of "control" or concur in that given in the United States draft treaty.

I should now like to comment on the provision in article II of the Soviet draft that parties to the treaty not possessing nuclear weapons "shall not participate in the ... control or use of such weapons ..." (ENDC/164, p.5). It seems to the Canadian delegation that this provision, if taken at its face value, would eliminate existing arrangements between the United States and some other countries for the use of certain tactical nuclear weapons. Under these arrangements, the details of which have been well known for years, the United States maintains control and physical custody of the nuclear weapons -- bombs or warheads. It is clear that what is proposed, if we are to take the words of the Soviet text at their face value, is not a measure to prevent a further proliferation of nuclear weapons but a measure of disarmament. And, as communist spokesmen have themselves reiterated, measures of disarmament should not be linked organically to a non-proliferation treaty.

(Mr. Burns, Canada)

As regards these bilateral arrangements for tactical nuclear weapons, since the forces of the Soviet Union are well known to be equipped with them it would not be possible to leave the troops of the various nations members of NATO with no means of responding to the use of such weapons. Furthermore, it has been stated -- and not denied -- that some nations in the Warsaw Pact, in addition to the Soviet Union, possess rockets which are dual-purpose; that is, they could carry either a high explosive or a nuclear warhead to a distant target.

Article II of the Soviet draft treaty of course says nothing about the elimination of tactical nuclear weapon vehicles. Nevertheless, while these vehicles exist it would also be possible, if there were a warlike situation, for a nuclear Power to equip them quickly with nuclear warheads. It therefore seems clear that to deal with the problem of tactical nuclear weapons in Europe -- and I do not believe that there is another part of the world where there is such a confrontation of tactical nuclear weapons -- a different kind of measure would be required. Indeed, proposals for such a measure have been put forward by the Polish Government in what is generally referred to as the Gomulka plan (ENDC/PV.189, p.6), which is currently being studied in a number of capitals.

In this connexion there is a passage of considerable importance in the Note which the Federal Republic of Germany sent to all nations represented on this Committee and to many other States. Section V, paragraph 2 of that Note reads:

"The Federal Government therefore declares that it is prepared to consent to any agreement in which the countries concerned pledge themselves not to increase the number of nuclear weapons in Europe but to reduce them in stages. Such an agreement, however, would have to extend to the whole of Europe, preserve the overall balance of power, provide for effective control, and be linked with essential progress in the solution of political problems in Central Europe."

For our part, we find this Note a clear and useful statement of the official position of the Government of the Federal Republic of Germany on important questions of European security, arms control and disarmament.

In conclusion, I should like to reiterate our suggestion that the United States and the Soviet Union delegations agree to meet soon to discuss the parts I have singled out in articles I and II of their draft treaties, where the two sides appear to have a common intention -- although it is not expressed in identical language.

(Mr. Burns, Canada)

There would be an excellent opportunity during the next few weeks for such meetings. It may be that other sections as well could be found in the drafts -- for example, in the preamble or the later articles -- on which several drafting meetings could produce agreed language. While we fully recognize that this might leave important considerations -- perhaps the most important considerations -- still to be resolved, nevertheless, in the view of the Canadian delegation, it would be useful work which should be done now to move forward toward the goal of this Committee: an agreed, world-wide non-proliferation treaty.

The CHAIRMAN (United Kingdom): I understand that the representative of the United States wishes to address the Committee on another collateral measure. That being so, I should like to know if any other representative wishes to speak on the subject of the non-proliferation treaty before I call on the representative of the United States. As that is not the case, I now call on the representative of the United States.

Mr. FISHER (United States of America): I have listened with great interest to the statements made by one representative of Poland and the representative of Canada. The United States delegation will of course comment upon them at the appropriate time.

As you have pointed out, Mr. Chairman, in accordance with the understanding reached between the two co-Chairmen and adopted at our last meeting (ENDC/PV.253, p.17), it was agreed that at the present meeting and the next one, if time remained after the statements that were to be made on non-proliferation, further collateral measures might be discussed. We have now heard the representatives who wished to speak on non-proliferation; and since some time remains I should like to return to the discussion of collateral measures. In particular, I should like to return to the discussion of the test ban. In doing so, I should like to stress that it is not my intention to detract in any way from the recognized urgency and importance of our present discussion on non-proliferation. I merely wish to make some observations on the test-ban question which seem to the delegation of the United States to be both timely and important.

There is no need, of course, to point out to this Committee the importance of negotiating a comprehensive test-ban treaty. There is certainly no need to remind the members of this Committee of the relevance of such a treaty to the problem of non-proliferation. Statements by various representatives at this

(Mr. Fisher, United States)

Conference have made it clear that those around this table have as accurate an understanding of the problem as has the United States. After all, we have travelled a long road together in our attempts to find a way to bring all nuclear weapon testing to an end once and for all.

This morning I should like to look at where this long road has taken us in relation to our technical problems, and where it can take us in a political sense. I should like to explain the technical rationale for the position of the United States on the necessity for an adequate system of verifying a comprehensive test ban. I should also like to describe the system of verification by on-site inspection proposed by the United States, and to show -- I hope to the satisfaction of the delegations around this table -- that this system injures no legitimate interest of any party to a comprehensive test-ban treaty, but rather serves as the foundation for a stable and lasting treaty.

We are all too familiar with where the difficulty lies in achieving agreement on a treaty banning underground nuclear weapon tests. The United States and the Soviet Union cannot agree on what is necessary adequately to verify such a treaty. Why is agreement so hard to reach? Both parties agree that a comprehensive test-ban treaty is so important to their respective security interests that it must be adequately verified. Both parties agree that the verification system for such a treaty should not be one which demands inspection for its own sake. Both parties agree that the requirements for verification should involve no more than is necessary to give reasonable assurance that the test ban is being observed. Yet this agreement on general principles disappears when we come to the specifics of monitoring a comprehensive test ban.

For its part, the United States believes that some on-site inspections are essential if the parties to a comprehensive test ban are to have reasonable assurance that other parties are fully complying with it. It has supplied the scientific evidence upon which it bases this opinion. It has invited its colleagues representing the Soviet Union to present any scientific data pointing to a contrary conclusion, if they have any. This invitation, unfortunately, has not been accepted. Instead, the Soviet Union has confined itself to flat assertions that national means of detecting nuclear explosions are enough for monitoring a comprehensive test ban. By this reference to "national means", I may point out, our Soviet colleagues are telling us that the seismic stations monitoring events within the Soviet Union will have to be outside the Soviet Union and hence quite remote from those events.

(Mr. Fisher, United States)

Last September (ENDC/PV.213, p.64) Mr. Foster described the effort being undertaken by the United States to develop a system for obtaining the greatest amount of information about seismic events in other countries by seismic stations remote from the events. He pointed out that the first problem faced by such a system is detection. Here the noise common to all seismic recordings must be filtered out. The next problem is location. This process requires good recordings of the event at a number of widely-spaced stations. The final problem is identification of the event, which can be accomplished only if the seismic signals make it clear that the event is an earthquake. I shall deal with this problem in somewhat greater detail in a moment. At present it is enough to say that the ability to identify an event is directly related to the sensitivity of the seismic system.

The United States is making substantial progress in developing a seismic system far more sensitive than any which has previously existed. Last autumn, at Billings, Montana, the United States dedicated the first LASH -- or large-aperture seismic array system -- installed in the world. This is a large array of 525 seismometers spread over an area 200 kilometres in diameter. This array is now in operation, although still in the research stage. Nevertheless, we can expect that this array will lead to a substantial improvement over presently-existing seismic detection systems in the ability to detect at long range -- or, in scientific language, at tele-seismic distances -- low-magnitude seismic signals. Given a world-wide system of ten or twelve of these seismic arrays, we can hope to detect all natural seismic events of a seismic magnitude of four or greater.

What, we may ask, can we expect to learn from this system, particularly in so far as it relates to seismic events within the Soviet Union? We believe that this system will show that there will on average be 250 such seismic events a year in the Soviet Union. This means that there will be 250 seismic events a year of a seismic magnitude of four or greater. They will correspond in size to the seismic events created by underground nuclear explosions with yields ranging from a few kilotons to at least several hundred kilotons.

(Mr. Fisher, United States)

No seismic criteria are presently known to Western scientists which permit of the identification of any one of these events as explosions by seismic signals measured at remote locations -- that is, the distances which would be involved with the "national" systems to which our Soviet colleagues have referred as adequate to monitor a comprehensive test ban. This is because it is a fact of nature that explosions do not produce signals which are unique to explosions and not also characteristic of some earthquakes. This is, I repeat, a fact of nature. We may not like that fact, we may be sorry that it is so, but it is. Even though our Soviet colleagues have frequently made statements to the contrary, they have never, despite our repeated requests, presented any data to alter this conclusion; and we have no basis for believing that such data exist.

On the other hand -- looking at the other side of the coin, so to speak -- it is true that many earthquakes produce seismic signals from which it can be determined that they were in fact earthquakes and not man-made explosions. If the analysis of the seismic data shows that the event occurred at a point far below the earth's surface, or that the seismic signal is sufficiently complex, or that the first motion of the seismic signals shows characteristics associated only with earthquakes, the event was probably an earthquake.

On this basis, and on the basis of the system of LASA seismic stations I have just mentioned, it will be possible to identify as earthquakes approximately 80 per cent of the 250 events to which I have referred. But even after we had eliminated all these events from the unidentified category, there would still remain around forty-five a year in the Soviet Union on which the seismic data would give no indication whatsoever as to whether they are earthquakes or explosions.

This is the cause of our difficulty. Unless some sort of reassurance by some on-site inspections can be obtained that these remaining events are not explosions, each one could become the source of suspicion that it might have been an underground test. A comprehensive test ban which depended solely for verification on seismic detection systems would therefore not be adequately verified. With this as the sole method of verification, it would be possible for a nation to conduct a certain number of clandestine underground nuclear test explosions each year which could not be distinguished, on the basis of seismic data alone, from naturally-occurring seismic events.

In considering a comprehensive test ban we are dealing with matters of vital security interest. Nuclear weapons are the crucial element of our strategic deterrent forces. If we are to accept a measure which puts a real and final curb on development of this essential element of our deterrent system, there must be adequate verification that all parties are living up to it.

(Mr. Fisher, United States)

How do we achieve this? It is the considered technical judgement of the United States that some on-site inspections each year would, in conjunction with the modern developments in seismology and its related technology, offer an adequate verification system for a comprehensive test-ban agreement. The basis for this judgement is that the right to conduct some on-site inspections would provide an unambiguous demonstration of a violation and hence would serve to deter any possible violator.

In her interesting remarks at our meeting on 10 March the representative of Sweden, Mrs. Myrdal, suggested (ENDC/PV.247, p.22) as a possible alternative to on-site inspections a system of verification by challenge under which a State upon whose territory an unidentified event had taken place could be challenged to provide evidence that the event was natural in origin. She pointed out that several refusals on challenge to provide evidence that an unidentified event was natural in origin might well provide evidence of a violation of a test-ban agreement. She cast some doubt upon the effectiveness of on-site inspections, (ibid, p.20) quoting a statement of a famous United States scientist which was made in 1960 as part of an argument against a comprehensive test ban. She raised the quite legitimate and interesting question whether an on-site inspection would provide evidence of a breach of a test-ban agreement which would be so much clearer than that provided by several refusals of a challenge as to justify the United States insistence upon on-site inspections in the face of the present Soviet refusal to agree to them.

In considering this interesting suggestion and this quite legitimate question, we should note that there is no scientific basis on which a particular unidentified event can be considered as more suspicious than any other by analysing the seismic data relating to it. The forty-five events a year that, on the average, remain unidentified in the Soviet Union represent the residue after all the seismic criteria have been applied. Those seismic criteria, as I pointed out earlier, make it possible to eliminate all but forty-five of the 250 events in the Soviet Union; but, I repeat, these forty-five events represent what remains after all the criteria have been applied. Therefore, the idea that a system of verification by challenge will reduce international tension because it merely affords a State the opportunity of clearing its name after its integrity has somehow been placed in doubt by seismic evidence does not, I submit, accurately reflect the present state of our scientific knowledge.

(Mr. Fisher, United States)

Under a system of verification by challenge, the integrity of the challenged party will not have been placed in doubt by seismic evidence because no seismic evidence will point to any one of these forty-five unidentified events as appreciably more suspicious than any other. It will be the challenge by the challenging party, not seismic data, that will cast the slur on the integrity of the challenged party. To put it very simply, a challenge represents an accusation: it represents an accusation that a particular seismic event was suspicious; it represents an accusation that a nation has possibly violated a solemn international treaty; it represents an accusation that a nation was possibly trying to upset the strategic balance through clandestine nuclear weapon development. A treaty which depends on such a procedure of accusations is not likely to reduce international tension.

Against this background, let us consider the probably reaction of the Soviet Union to a challenge. I think that we can make a pretty good estimate by analysing the dialogue which has been going on at this Conference regarding the necessity for on-site inspections. As I indicated earlier, the representatives of the United States have stated that some on-site inspections are necessary adequately to verify a test-ban treaty. They have time and time again presented the scientific information which has led them to that conclusion. They have time and time again requested the Soviet Union to present any data which point to the contrary conclusion. These requests have never been answered; instead, they have been met with the flat denial of any need for on-site inspection to resolve the identity of a possible unidentified seismic event.

Under this circumstance, how much meaning is the concept of challenge inspections as a system of adequate verification likely to have? Such a challenge would, on the basis of the present position of the Soviet Union, simply be met by the reply that seismic means were sufficient for identification and no inspection or further information was necessary. Would this be a stable arrangement? Would this lead to a relaxation of tension?

The dialogue on the necessity for on-site inspections has been frustrating enough when carried on at this Conference as part of the negotiations for a comprehensive test ban. I submit that it would be worse than frustrating if it were carried out within the context of a system of challenge inspections, such as that contemplated by the representative of Sweden in her interesting observations. I submit that we must settle the differences which apparently exist concerning the necessity for verifying on-site inspections before the treaty is signed -- not afterwards. I submit also that if a treaty were signed with these differences outstanding, it might be short-lived indeed.

(Mr. Fisher, United States)

Let me now describe what on-site inspection would involve, what it would demonstrate and why the United States believes that it would injure no legitimate interest of any party to a comprehensive test-ban treaty, but would rather serve as the foundation for a stable and lasting treaty.

If a particular unidentified seismic event were selected for inspection, the area to be inspected would have to be determined by the analysis of the seismic data. On-site inspection of the area would first indicate whether there was evidence of the high level of human activity associated with an underground nuclear test. An underground nuclear test involves the movement of large quantities of equipment and material. The evidence of this movement might include oil spots left by power generators, earth-moving machinery and various types of vehicles, as well as the tracks of these vehicles. Sites at which there had been considerable human activity would be expected to be more compacted than surrounding areas. Evidence of human activity might include such material as bits of electrical tape, wire, cable, nails and timber, and material of that kind.

It is, of course, true that if there had been a clandestine test an attempt would undoubtedly be made to conceal any such evidence. It is also true that similar evidence might be found in the vicinity of a mine or an oil well. However, the presence of such features indicating human activity would also indicate where the inspectors should concentrate their efforts in looking for explosion-generated effects. This area would be searched for possible surface effects, such as fissures in soil and cracks in rock, displacement of loose materials, and possible changes in vegetation. Such manifestations of an underground shock might, it is true, have been caused by either a nuclear test or an earthquake; but they could be expected to be much more pronounced in the case of an underground nuclear explosion than in the case of an earthquake of the same magnitude. Also, the pattern of surface effects is likely to be more symmetrical around the origin of an underground nuclear explosion than it would be in the vicinity of an earthquake.

The reason for this differentiation of surface phenomena between an earthquake and a nuclear explosion is that even "shallow" earthquakes are most likely to occur at greater depths than that at which an underground nuclear explosion would have been conducted. I might add that such surface effects and these characteristics have been noted for underground nuclear explosions conducted in the United States.

We must allow, of course, for the possibility that a violator might have taken steps to conceal or camouflage these characteristics. Here, we must also note that a more determining and a unique characteristic of all nuclear explosions is the radioactivity

(Mr. Fisher, United States)

produced by the burst. It is probable that the radioactive fission-product gases from an underground nuclear explosion will leak slowly upwards toward the surface, where with sensitive detectors some of these gases unique to a nuclear explosion could probably be discovered by the inspection. Only if the location were subject to on-site inspection would a violator have to consider seriously the possibility of such a leakage and the risk it would entail.

The scientific techniques for detecting and analysing these special gases have been worked out in the course of research conducted by the United States on on-site inspection. On-site inspectors would be equipped to take samples of surface, water and soil gases. Soil-gas samples would be obtained by drilling in suitable soils a shallow hole from which gases in the surrounding soil would be pumped out. Air or surface samples would be obtained by merely pumping a quantity of air taken in the vicinity of the unidentified seismic event. These samples of gas, taken from the soil, the air, and also any water in the vicinity, would be subject to chemical and radioactive analysis. The detection of these gases, which are unique to the explosion of a nuclear weapon, would certainly supply unambiguous evidence that an underground nuclear explosion had taken place.

Furthermore, these inspections, while serving as a deterrent to a possible violator, serve just as importantly to reassure all others that the treaty is being observed. There is then no question of "unclear" or "suspicious" events. On-site inspections will serve to reassure all that the "unidentified" seismic events may be seismically "unidentified" but nevertheless are simply naturally-occurring earthquakes and a threat to the security of no one.

Furthermore, obligatory inspections carried out as an integral part of the verification process should not and would not be considered as an antagonistic action or a battle of wits between inspectors and the country being inspected. We would hope, and indeed we would expect, that there would be co-operation. If the country having its territory inspected can simplify the task of the inspectors and help to establish the nature of the unidentified seismic event, so much the better. However, the fact that a nation can and should assist in and simplify the task of verification does not negate the need for obligatory on-site inspections.

I said at the outset of my remarks that the system of on-site inspections proposed by the United States would injure no legitimate interest of any party to a comprehensive test-ban treaty. I have just described this system, and I would respectfully ask the representative of the Soviet Union to advise the Conference -- at any appropriate time that he chooses, of course -- what his Government finds objectionable in the system

(Mr. Fisher United States)

that I have outlined. I would respectfully request that he do so by being specific and not by repeating, as many of his predecessors have done, the blanket statement that on-site inspection is equivalent to espionage. I make this request in a friendly spirit, and I assure him that the United States is not interested in using on-site inspection as espionage. But if there is anything in this system that we have proposed which seems to the Soviet Union to involve objectionable elements, we should like to know what they are so that we can take them into account.

In my discussions with many delegations at this Conference I have detected this feeling on the part of some: while they agree, as a technical matter, with the United States position on the necessity of on-site inspections, they nevertheless feel that the United States should go ahead and sign a treaty without on-site inspections and take the risk of possible violation by other parties. Here, if I may be permitted to use a word that has been used a great deal in another context, they seem to be suggesting that the United States should sign a comprehensive test ban treaty even though it has loop-holes that are not plugged by the right of on-site inspection.

I recognize that no course of action in human affairs -- and particularly in international affairs -- is without risks. What we have to do in each case is to balance risks. In this case we have to decide whether the risks under a comprehensive test-ban treaty which did not have effective provisions for verification would be greater than the risks with which we might be faced if we were unable to get a treaty banning all tests.

I have very little difficulty in answering this question in the affirmative. In particular, I have very little difficulty in rejecting the argument that we really have nothing to fear from clandestine violations of a comprehensive test ban treaty because nothing serious for United States security could be brought about by such a violation. If this were the case, I might ask: why are we so concerned about negotiating a comprehensive test-ban treaty? By negotiating the limited test-ban Treaty (ENDC/100/Rev.1) we have already dealt -- at least so far as the signatories to the Treaty are concerned -- with the problem of fall-out. By negotiating that Treaty we have already put a real curb on nuclear weapon development, particularly on the development of weapons in the higher-yield range, with their almost unbelievable destructive capacity.

The reason we are concerned about banning underground nuclear weapon tests, however, is precisely that we are concerned that these tests may lead to dangerous technological break-throughs which, as Mrs. Myrdal pointed out in her interesting remarks (ENDC/PV.247 p.15), might upset the present nuclear balance. It is for this reason that a comprehensive

(Mr. Fisher, United States)

test ban, concerned as it is with the security interests of the two great Powers, must give assurance to these Powers that their vital security interests have been protected and even enhanced by its adoption. Without the assurance that adequate verification would provide, the hope for the future that such a measure would offer would, I fear, soon give way to uncertainty, to suspicion and to increased international tension.

A measure with the significance of a comprehensive test-ban treaty should lead us to a more stable world peace, not to one of increased uncertainty. All too certainly, the failure of such a measure, brought down by the suspicion arising from inadequate verification, would be a terrible blow to our efforts and a step backward in time. It is for this very simple, and I believe self-evident, reason that the United States insists upon adequate verification. I refer those who suggest compromise on this essential principle to an old truth, uttered long ago by Aesop: "Beware lest you lose the substance by grasping at the shadow".

The Conference decided to issue the following communiqué:

"The Conference of the Eighteen-Nation Committee on Disarmament today held its 254th plenary meeting in the Palais des Nations, Geneva, under the chairmanship of Lord Chalfont, representative of the United Kingdom.

"Statements were made by the representatives of Poland, Canada and the United States.

"The next meeting of the Conference will be held on Tuesday, 5 April 1966, at 10.30 a.m.

The meeting rose at 11.55 a.m.